The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

Ex parte BERNARDINUS HENRICUS BOSMANS,
JOSE LUIS BRAVO,
GERRIT KONIJN,
and
KAREL ANTONIUS KUSTERS

_____

Appeal No. 2004-0804
Application No. 09/757,886

_____

ON BRIEF

_____

Before WARREN, KRATZ, and DELMENDO, Administrative Patent Judges.

DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 (2003) from the examiner's final rejection of claims 1 through 10 (final Office action mailed Oct. 24, 2002, paper 11), which

are all the claims pending in the above-identified application.[1]

The subject matter on appeal relates to a gas-liquid contacting tray (claims 1-6) and to a column comprising a plurality of axially spaced trays (claims 7-10). Further details of this appealed subject matter are recited in representative claims 1 through 3 and 6 through 9 reproduced below:

> 1. A gas-liquid contacting tray comprising:
> a bubble area; and,
> one or more rectangular downcomers each having a length and a width wherein the length is longer than the width, and an upper and lower end, wherein each downcomer shares two boundaries with the bubble area along the length comprising:
> two sloped downcomer walls along the length;
> a downcomer opening at tray level; and,
> one or more downward directed liquid discharge openings at its lower end; wherein the downcomers are so positioned on the tray that the bubble area is present along the length, wherein the cross-sectional area at the lower end of the downcomer is less than about 40% of the cross-sectional area of the upper end of the downcomer at tray level.
>
> 2. The tray of claim 1, in which the cross-sectional area at the lower end of the downcomer is between about 5 and 40% of the cross-sectional area of the upper end of the downcomer at tray level.
>
> 3. The tray of claim 2, in which the cross-sectional area at the lower end of the downcomer is between about 10 and 30% of the cross-

[1] In reply to the final Office action, the appellants submitted a 37 CFR § 1.116 (2003)(effective Feb. 5, 2001) amendment, proposing a change to claim 7. The examiner, however, denied entry of this amendment. (Advisory action mailed Jun. 25, 2003, paper 16.)

sectional area of the upper end of the downcomer at tray level.

6. The tray of claim 1, in which the tray is divided in two tray sections by a diametrical line, each tray section provided with a row of rectangular downcomers, the downcomers arranged perpendicular to the diametrical line such that the ends of the downcomers of each tray section meet this line in an alternating fashion.

7. A column comprising a plurality of axially spaced trays with a distance of a tray space between the trays, each tray comprising:
a bubble area; and,
one or more rectangular downcomers sharing at least one boundary with the bubble area, each having a length and a width wherein the length is longer than the width, and an upper and lower end, comprising:
two sloped downcomer walls along the length;
a downcomer opening at tray level; and,
one or more downward directed liquid discharge openings at its lower end; wherein the downcomers are so positioned on the tray that bubble area is present along the length, wherein the cross-sectional area at the lower end of the downcomer is less than 40% of the cross-sectional area of the upper end of the downcomer at tray level.

8. The column of claim 7, in which the downcomer extends between about 50 and 90% of the tray spacing below a tray.

9. The column of claim 8, in which an inlet weir is present along a boundary of an area just below the liquid discharge openings of a tray and the corresponding bubble area.

The examiner relies on the following prior art references as evidence of unpatentability:

Jenkins	4,496,430	Jan. 29, 1985

Sampath et al. (Sampath)	5,230,839	Jul. 27, 1993
Yu et al. (Yu)	6,299,146 B1 (filed Dec. 22, 1999)	Oct. 09, 2001
Bentham (EP '262)(published EP application)	0 092 262 A1	Oct. 26, 1983
Fan et al. (WO '621)(published PCT application)	WO 99/12621	Mar. 18, 1999

The appealed claims stand rejected as follows:

I. claims 7 and 8 under 35 U.S.C. § 102(b) as anticipated by WO '621 (examiner's answer mailed Jul. 16, 2003, paper 17, page 3);

II. claims 1, 2, 7, and 8 under 35 U.S.C. § 102(b) as anticipated by EP '262 (id.);

III. claims 3 through 5 under 35 U.S.C. § 103(a) as unpatentable over EP '262 (id. at pages 3-4);

IV. claim 6 under 35 U.S.C. § 103(a) as unpatentable over EP '262 in view of Jenkins (id. at page 4); and

V. claims 9 and 10 under 35 U.S.C. § 103(a) as unpatentable over either WO '621 or EP '262, each in view of either Sampath or Yu (id. at pages 4-5).

We affirm rejections I, III, IV, and V but reverse rejection II.[2] In addition, we enter a new ground of rejection pursuant to 37 CFR § 1.196(b) (2003)(effective Dec. 1, 1997).

I. Claims 7 & 8 under 35 U.S.C. § 102(b) over WO '621

The appellants do not dispute the examiner's determination (answer, page 3) that Figure 9 of WO '621 anticipates appealed claim 7 as it is now written. Rather, the appellants' only argument against this rejection is that the 37 CFR § 1.116 reply amended claim 7 such that it corresponds to claim 1 as amended in the reply filed Sep. 16, 2002. (Appeal brief, page 3; reply brief filed Aug. 18, 2003, pages 1-2.)

The appellants' argument lacks discernible merit. As pointed out by the examiner (answer, page 5), the 37 CFR § 1.116 amendment was denied entry. (Advisory action mailed Jun. 25, 2003.)

[2] The appellants submit that "[t]he claims stand or fall together." (Appeal brief filed May 27, 2003, p. 3.) We interpret the appellants' statement to mean that the claims subject to a common ground of rejection stand or fall together. Accordingly, we confine our discussion to claim 7 for rejection I, claim 3 for rejection III, and claim 9 for rejection V. 37 CFR § 1.192(c)(7)(2003)(effective Apr. 21, 1995).

Because the appellants make no substantive argument against this ground of rejection, we affirm.[3]

II. Claims 1, 2, 7, & 8 under 35 U.S.C. § 102(b) over EP '262

"To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently." In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); accord Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995).

The examiner states that Figures 1 and 2 of EP '262 anticipate the appealed claims. (Answer, page 3.) The appellants, on the other hand, argue that EP '262 does not disclose the recited cross-sectional area relationship between the lower end and the upper end of the downcomer of "less than about 40%" (appealed claim 1) or "less than 40%" (appealed claim 7). (Appeal brief, pages 3-4.)

We agree with the appellants on this issue. The examiner does not refer us to any part of EP '262 that describes, either expressly or inherently, each and every claim limitation,

[3] We lack jurisdiction to review an examiner's decision to deny entry of an amendment. The appellants' proper recourse would have been to file a timely petition requesting supervisory review pursuant to 37 CFR § 1.181 (2003) (effective Feb. 5, 2001). See MPEP §§ 714.13 and 1002.02(c) (Rev. 1, Feb. 2003 and Aug. 2001).

including the contested limitation. While the examiner argues that "[t]he drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art," there is no explanation on how and why the downcomers depicted in Figures 1 and 2 of the reference would necessarily satisfy the contested limitation.

Because the examiner has not established a prima facie case of anticipation within the meaning of 35 U.S.C. § 102, we cannot affirm.

III. Claims 3-5 under 35 U.S.C. § 103(a) over EP '262

Appealed claim 3 recites that "the cross-sectional area at the lower end of the downcomer is between about 10 and 30% of the cross-sectional area of the upper end of the downcomer at tray level." EP '262 does not describe the relationship between the cross-sectional area of the lower end and the upper end of the downcomer at tray level.

EP '262 teaches, however, that the downcomers "pass through the tray to a predetermined height above the upper surface of said tray and a predetermined distance below the lower surface of said tray" and that the downcomers "have a configuration

resembling a frustum in cross-section." (Page 5.) Further, EP '262 teaches:

> The aggregate area of the liquid discharge openings 6 in each downcomer duct 4 should be sufficient for discharging all of the liquid flowing downwards through the column interior at the intended liquid loading and should be restricted with respect to the horizontal cross-sectional areas of the lower parts of the downcomer ducts so as to maintain in said downcomer ducts a column of liquid which exerts at the liquid discharge openings 6 a hydrostatic head sufficient to prevent ascending gas from entering these downcomer ducts 4.

This teaching would have reasonably suggested to one of ordinary skill in the art that the cross-sectional area relationship between the lower end and the upper end of the downcomer at tray level is a result-effective variable.[4]

It is our judgment, therefore, that one of ordinary skill in the art would have found it prima facie obvious based on the prior art teachings as a whole to determine by routine experimentation a workable or even optimum range of lower end cross-sectional area to upper end cross-sectional area ratios, thus arriving at an apparatus encompassed by appealed claim 3. In re Peterson, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003)("The normal desire of scientists or artisans to

[4] This is consistent with the appellants' acknowledged prior art (specification, pp. 1-2), which appreciated the cross-sectional area relationship as a tray design consideration.

improve upon what is generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980)("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.").

The appellants argue that absent any specific teaching in the prior art as to the dimensions of the downcomer, one of ordinary skill in the art would have been led to use "typical" prior art lower end cross-sectional area to upper end cross-sectional area ratios. (Appeal brief, pages 3-5.) For typical prior art ratios, which are said to be "between 1.5 and 2.0," the appellants rely on the textbook reference discussed in the specification at page 1, lines 21-25.[5]

The appellants' argument is unpersuasive. Nothing in the record establishes that the "typical" prior art ratios discussed in the specification at page 1, lines 21-25 are exclusive

workable ratios for the types of downcomers described in EP '262. Accordingly, the appellants' reliance on the textbook reference discussion is misplaced.

Because the appellants have not successfully rebutted the examiner's prima facie case of obviousness, we affirm this ground of rejection.

IV. Claim 6 under 35 U.S.C. § 103(a) over EP '262 and Jenkins

Regarding appealed claim 6, the appellants rely on the same argument as they did for appealed claim 3. Accordingly, we affirm this ground of rejection for the same reasons set forth above with respect to appealed claim 3.

V. Claims 9 & 10 under 35 U.S.C. § 103(a) over WO '621 or EP '262 in view of either Sampath or Yu

Regarding appealed claim 9, the appellants rely on the same arguments as they did for appealed claims 3 and 7. Accordingly, we affirm this rejection for the same reasons set forth above with respect to appealed claims 3 and 7.

[5] Contrary to the appellants' representation (appeal brief, p. 4), an excerpt of this reference has not been enclosed with

New Ground of Rejection

We enter the following new ground of rejection pursuant to 37 CFR § 1.196(b).

Claims 1, 2, 7, and 8 are rejected under 35 U.S.C. § 103(a) as unpatentable over EP '262.

Because we have determined that the subject matter of appealed claim 3 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103, it necessarily follows that we must reach the same conclusion for appealed claims 1 and 2, which are the base claims for dependent claim 3. The same reasons supporting an obviousness determination applies to appealed claim 7, because this claim differs from appealed claim 1 only in the recitation of a column, which is disclosed in EP '262.

As to appealed claim 8, the distance by which a downcomer extends above or below a tray is suggested as a result-effective variable in EP '262. (Page 5.) Accordingly, one of ordinary skill in the art would have found it prima facie obvious based on the prior art teachings as a whole to determine by routine experimentation a workable or even optimum range of distances by which the downcomers should extend through the tray, thus arriving at an apparatus encompassed by appealed claim 8. In re

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the appeal brief.

Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382; In re Boesch, 617 F.2d at 276, 205 USPQ at 219; In re Aller, 220 F.2d at 456, 105 USPQ at 235.

Summary

In summary, we affirm the examiner's rejections under: 35 U.S.C. § 102(b) of appealed claims 7 and 8 as anticipated by WO '621; 35 U.S.C. § 103(a) of appealed claims 3 through 5 as unpatentable over EP '262; 35 U.S.C. § 103(a) of appealed claim 6 as unpatentable over EP '262 in view of Jenkins; and 35 U.S.C. § 103(a) of appealed claims 9 and 10 as unpatentable over either WO '621 or EP '262, each in view of either Sampath or Yu. We reverse, however, the examiner's rejection under 35 U.S.C. § 102(b) of appealed claims 1, 2, 7, and 8 as anticipated by EP '262. In addition, we have entered a new ground of rejection pursuant to 37 CFR § 1.196(b).

The decision of the examiner is therefore affirmed in part.

In addition to affirming the examiner's rejection of one or more claims, this decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b). 37 CFR § 1.196(b) provides: "A new ground of rejection shall not be considered final for purposes of judicial review."

Regarding any affirmed rejection, 37 CFR § 1.197(b) (2003)(effective Dec. 1, 1997) provides:

> (b) Appellant may file a single request for rehearing within two months from the date of the original decision...

37 CFR § 1.196(b) also provides that the appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

> (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner...
>
> (2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record...

Should the appellants elect to prosecute further before the examiner pursuant to 37 CFR § 1.196(b)(1), in order to preserve the right to seek review under 35 U.S.C. § 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the appellants elect prosecution before the examiner and this does not result in allowance of the application,

abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED IN PART
37 CFR § 1.196(b)

Charles F. Warren	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
Peter F. Kratz	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
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